

CLAIMS

1. A formed product characterized by having an ultra fine structure comprising ferrite grains of average grain diameter of 3 μm or less.
2. A formed product characterized by using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 3 μm or less as raw material, and being produced by a forming step only, not followed by refining steps.
3. A formed product characterized by having an ultra fine structure comprising elongated ferrite grains of average grain diameter of shorter diameter of 3 μm or less.
4. A formed product characterized by using a steel having an ultra fine structure comprising elongated ferrite grains of average grain diameter of shorter diameter of 3 μm or less as raw material, and being produced by a forming step only, not followed by refining steps.
5. The formed product as in claims 1 to 4, wherein the composition is, by wt.%, of
C: 0.001% or more, 1.2% or less,
Si: 2% or less,
Mn: 3% or less,
P: 0.2% or less,
S: 0.1% or less,
Al: 0.3% or less,
N: 0.02% or less,
and a balance of Fe and inevitable impurities.
6. The formed product as in claims 1 to 4, wherein the Vickers hardness is 200 or more.
7. A production method for a formed product without refining treatments comprising using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 3 μm or less as raw material, and forming only, not followed by refining.

8. The production method for a formed product of claim 7, in which using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 1 μm or less as raw material.
9. A production method for a formed product without refining treatments comprising using a steel having an ultra fine structure comprising elongated ferrite grains of shorter grain diameter of 3 μm or less as raw material, by warm working or cold working of a material having ultra fine structure, and forming only, not followed by refining.
10. A screw or bolt characterized by having an ultra fine structure comprising ferrite grains of average grain diameter of 1 μm or less.
11. A screw or bolt characterized by using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 1 μm or less as raw material, and being produced by a forming step only, not followed by refining steps.
12. The screw or bolt of high strength of claim 10 or 11, characterized by having a strength of 8.8 or more in JIS strength classification.
13. A production method for a screw or bolt without refining treatments comprising using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 1 μm or less as raw material, and forming only by at least one process of cold working and worm working, not followed by refining steps.
14. The production method for a screw or bolt of claim 13, in which using a steel having an ultra fine structure comprising ferrite grains of average grain diameter of 0.7 μm or less as raw material.
15. A screw or bolt characterized by having an ultra fine structure comprising elongated ferrite grains of average grain diameter of shorter diameter of 1 μm or less.
16. A screw or bolt characterized by using a steel having an ultra fine structure comprising elongated ferrite grains of average grain diameter of shorter diameter of 1 μm or less as raw material, and being produced by a forming step only, not followed by

refining steps.

17. A production method for a screw or bolt, characterized by using a steel having an ultra fine structure comprising elongated ferrite grains of grain diameter shorter diameter of 3 μm or less as raw material, by warm working or cold working of material having ultra fine structure, and being produced by a forming step only, not followed by refining steps.